DOCUMENT RESUME

ED 375 130 SP 035 525

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TITLE Differences in Novice and Competent Teachers' Knowledge.
PUB DATE Apr 94
NOTE 20p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-8, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis; *Developmental Continuity; Elementary Secondary Education; Higher Education; *Knowledge Level; *Lesson Plans; Physical Education; *Student Teachers; Teacher Education; Teaching (Occupation); Teaching Experience
IDENTIFIERS *Experienced Teachers; *Pedagogical Content Knowledge

ABSTRACT

This study investigates the differences between competent and novice teachers' knowledge of teaching physical education. Participants were teachers (N=5) with five or more years of teaching experience, and novices (N=5), student teachers within a year of graduation with no prior public school teaching experience. Data were gathered through audiotaped, extended, multiple interviews that focused on the knowledge teachers used in planning and conducting physical education classes. Themes and categories emerging from the data were then compared with D. C. Berliner's theory of the acquisition of teaching expertise, a developmental sequence characterized by the following levels: novice, advanced beginner, competent, proficient, and expert. Findings suggest that novices require different strategies to meet their occupational demands and different forms of inservice training. Competent teachers would appear to benefit from inservice programs that allow them to share ideas regarding instructional activities with emphasis on the technical qualities of skills and concepts. Specific differences were found between competent and novice teachers in assessing student learning difficulties, conceptions of knowledge, and reflective practice. (Contains 17 references.) (LL)

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DIFFERENCES IN NOVICE AND COMPETENT TEACHERS' KNOWLEDGE

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Paper presented at the American Educational Research Association annual meeting

New Orleans, LA

April, 1994

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DIFFERENCES IN NOVICE AND COMPETENT TEACHERS' KNOWLEDGE

Abstract

The purpose of this study was to investigate the knowledge differences between competent and novice teachers in physical education. Data were collected through extended, multiple interviews with five novice and five competent teachers. The teachers were interviewed three times and each interview lasted approximately one hour. The interviews focused on the knowledge the teachers used in planning and conducting their physical education classes. Data were analyzed using the constant comparative technique (Glaser & Strauss, 1967) and the findings were presented with reference to Berliner's (1988) theory of expertise acquisition in teaching. Specific difference were found between competent and novice teachers in assessing student learning difficulties, conceptions of knowledge, and reflective practice.

DIFFERENCES IN NOVICE AND COMPETENT TEACHERS' KNOWLEDGE

The pinnacle of any professional practice is reached by only a very few. These individuals we call experts, and it is they who set the standard for those who follow. Over the years, numerous studies in such diverse fields as chess, bridge, physics, and medicine have investigated what it takes to become an expert (Chase & Simon, 1973; Chi, Feltovich, & Glaser, 1981; Engle & Bukstel, 1978; Patel, Frederiksen, & Groen, 1984). Only recently, however, have researchers begun to systematically determine the nature and exhibition of expertise in teaching. To the novice, it appears that an expert's extensive experience and sophisticated knowledge enables them to accomplish high levels of performance and success with almost effortless ease.

Of particular interest to teachers and teacher educators is the question of how one progresses from novice to expert. Berliner (1988, in press) proposed a five-stage theory of the development of expertise: novice, advanced beginner, competent, proficient, and expert. The developmental sequence involved in the acquisition of pedagogical expertise identified distinctive features that characterized specific levels of expertise.

The journey an individual takes in becoming an expert within a field starts at the novice stage. Most first year teachers, and certainly student teachers, come under this category. As novices, teachers quickly learn the required context-free rules,

procedures, and skills in which real world experience is critical for learning to teach. As beginning teachers gain experience in the tasks of teaching, these teachers move from novice to advanced beginner. As advanced beginners, these teachers' behaviors are guided more by the teaching context than the context-free rules used by beginners.

Having survived the induction period (usually defined as the first three years of teaching), advanced beginners feel more comfortable with instructional decision-making and start engaging students and content in the teaching/learning process. Once this occurs, the advanced beginners have reached the developmental stage of competent teachers (Berliner, 1988).

At about the fifth year in the profession, some competent teachers may progress into the proficient stage, whereby they develop both intuitive sense and holistic perceptions of teaching situations. Finally, after years of teaching, a few proficient teachers move on to become experts. As expert teachers, teaching decisions and actions seem, to nonexperts, to be made almost effortlessly (Berliner, 1988, in press).

Research into the expertise in teaching remains a relatively new endeavor. However, with a growing recognition of the wisdom of held by practicing professionals, teacher educators and policy makers are exploring new leads into teacher knowledge, cognition, and actions. It is hoped that this information will become the raw material for building appropriate educational experiences in

teacher preparation programs and valid educational assessments for teacher licensure. Leading the way in these new explorations have been the expert-novice studies.

The purpose of the expert-novice studies has been to lay the foundation for understanding the nature of expertise in teaching. Comparisons of expert and novice teachers have shown expertise development in teaching following a path similar to other endeavors (e.g., chess, medicine, driving, physics). Like experts in other fields, expert teachers have amassed a large quantity of knowledge and possess elaborate cognitive schemata for meaningful interpretation and effective decision making that achieves exemplary performance. Expert knowledge systems provide a framework for differentiating relevant cues and attending to more salient information during planning and interactive decisions (Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Livington & Borko, 1989; Peterson & Comeaux, 1987). Experts are also better able to anticipate situations that were more likely to be encountered in classroom situations and were able to generate contingency plans based on those possibilities. They have established routines, procedures, rules, and strategies for classroom management, guiding student learning, and for solving instructional problems with maximum efficiency and minimal error (Leinhardt & Greeno, 1986).

The expertise research, particularly in physical education, do not have a long history. With the exception of several

studies attempting to understand competence in teaching physical education (Griffey & Housner, 1991; Housner & Griffey, 1985; Nelson, 1988; Siedentop & Eldar, 1989), there is generally an absence of research on the development of exemplary performance of physical education teachers. The purpose of this study was, therefore, to investigate the knowledge differences between teachers of varying levels of expertise.

Methods

Teachers. Five competent and five novice physical education teachers served as subjects in this study. Precise operational definitions that, for research purposes, delineate experts from proficient and competent teachers have yet to be established. We were also aware that expert teachers represent only a small fraction of the entire population of teachers. Therefore, locating truly expert physical educators seemed to be a task with considerable peril. We therefore selected competent teachers for this study because we were reasonably certain we could locate a critical mass of teachers with middle range expertise. Comparisons between competent and novice teachers would still permit us to address the central concern of this study (i.e., what are the manifest knowledge differences between teachers of varying levels of expertise?).

There were three criteria used to determine competent teachers: (a) five or more years of teaching experience, (b) recommended to the investigators by public school peers and

university faculty members as competent, and (c) sustained, acceptable service as a cooperating teacher. These criteria were selected because expertise appears dependent upon first and foremost, experience. Someone with an advanced level of expertise will normally have gained a reputation for the quality of their work. And finally, in the tradition of master craftspersons, someone with a competent level of expertise is able to demonstrate the intricacies of their craft to an apprentice.

The competent teachers were recruited from a list of possible participants who met the above criteria, were willing to participate, and within reasonable proximity to the researchers. The final participant pool of competent teachers had an average of 15 years teaching experience, ranging between 7 and 26 years. Besides their vast teaching experience, two of the teachers possessed doctorates in physical education, and one had been recently named the state teacher of the year. The remaining two were highly recommended from peers, and university faculty.

The novice teachers were student teachers who were within a year from graduation and teacher certification and had no prior public school teaching experience. Student teachers were selected over first year teachers because it was quite possible that first year teachers may have already moved to the advanced beginner stage of teaching expertise. The novice teachers were also selected based on their willingness to participate and

proximity to the investigators. While all novice teachers came from the same university, they had no experience with and did not know the investigators prior to this study.

Interview Protocol. The ten teachers were interviewed three times each using a modified interview protocol based upon Grossman's (1990) research. Prior to interviewing the teachers, the researchers reconstructed the interview questions based on Grossman's recommendations and findings. Further modifications were made based on a review of literature on expertise (Berliner, 1988), and discussions among the researchers.

The revised protocol was then pilot tested in individual interviews with four physical educators who were not involved in the study. Each investigator participated in the video taped pilot interviews. The video tapes were reviewed and critiqued by the investigative team to improve the interview style of the investigators (Spradely, 1979). The pilot data was also reviewed to insure the interview protocol yielded data suitable to the concerns of the study. Based on these four pilot interviews, points of contention and misinterpretation were clarified among the investigators and the interview protocol was further revised.

The participating teachers were interviewed at a place and time they found convenient. One teacher was interviewed in her home, some were interviewed in their school, and still others chose to come to the Curriculum & Instruction Research Lab at the University of Georgia. Each interview was conducted by two

investigators and lasted approximately one hour each. The first interview determined the teachers background in physical activity and their conceptions of teaching physical education. The second interview required the teachers to plan a hypothetical unit in a subject area in which they had no expertise and had not previously taught. The third interview explored the teaching of a specific skill within the planned unit.

Data Analysis. All interviews were audiotaped and then transcribed by the investigators. A total of 30 interviews (3 interviews x 10 teachers) were completed and transcribed. The transcripts were analyzed using the constant comparative method (Glaser & Strauss, 1967) where themes and categories were allowed to emerged from the data. The categories were then analyzed for underlying uniformities which helped identified differences between competent and novice teachers' knowledge. Next, these themes or uniformities were compared with Berliner's (1988) theory of the acquisition of teaching expertise.

Findings

The purpose of this study was to investigate the differences between competent and novice teachers' knowledge of teaching physical education. Berliner (1988) proposed that the development of expertise in teaching was a five-stage process: novice, advanced beginner, competent, proficient and expert. Each stage of development can be distinguished by characteristic features. The themes emerging from data analysis were compared

with the propositions of Berliner's theory of expertise.

Student learning difficulties. The novice teachers attributed student learning difficulties to the learners' background and/or characteristics. Specifically, novice teachers felt that majority of students bring into the learning environment physical problems that reflect present social issues related to the lack of parental supervision and concern for their children's physical inactivity. One consistent theme was the influence of television and computer games on the lives of the students. As one novice teacher succinctly puts it: "It has a lot to do with television and Nintendo games."

Novice teachers were quick to blame parents for not adopting the proper attitude in helping to influence their children's physiological well-being. Novice teachers felt that students would experience an easier time in physical education, had parents been good role models for their children in doing regular exercise and weight control. This sentiment was shared by all novice teachers interviewed:

> I would say that if the students' parents are active, most likely their children will be probably active . . . A lot of the students with weight problems are going to have quite a bit of difficulty with physical education.

This perception was characteristic of novices who, according to Berliner (1988, in press) tend towards inflexible thinking and a detachment from responsibility for their actions. In contrast,

the learning difficulties in physical education, as perceived by competent teachers, were related more to the structure and organization of the lessons, rather students' physical states or parental factors. One competent teacher put it thus:

> The teacher sets the tone for things happening in class. Are you one [the teacher] that sets [learning tasks] for the athletes, or for the so called normal students? What kind of spot (sic) does your program put these kids on?

As such, these competent teachers held themselves accountable for these problems, and thus, saw the solutions for these learning difficulties within their control. Characteristic of competent teachers, the teachers in our study felt directly responsible for student learning.

Conception of knowledge. When faced with learning new information, the competent teachers were quicker to admit their knowledge inadequacies and more willing to learn than were the novice teachers. Typical responses included, "I would feel so inadequate or incompetent as a teacher. I would get some books that I had or I would call up someone at the university and ask them," "I would feel pretty uncomfortable. I would have to find someone in a hurry that has some expertise that I didn't have. Try to get something from them . . . and read up," and "Well, I probably would panic a little bit. I would have to dig up some information. Other coaches. Library. Order videos, whatever."

In subject areas in which they knew little and yet were required to teach, competent teachers were intent on identifying the important components of the skills so that they could break the skill down and teach each component adequately. Furthermore, in presenting these new skills, they were more concerned with their ability to perform or demonstrate the skill adequately, as well as teach it properly. This is best illustrated by this comment from a 14 year veteran:

> I would also go over with myself all the basic mechanics of each skill. . . . I would teach the proper mechanics of how to hold the shot, the mechanics of what to do with your arm and shoulder, and hip rotation in putting the shot.

Another experienced teacher has this to add:

> I would have to learn to do it. I'd probably practice this skill before I teach it. I will not want to teach them anything I can't do myself.

Perhaps reflecting a greater confidence in themselves as teachers, but less secure in their knowledge than novices, competent teachers had no qualms about using knowledgeable students for class demonstrations and explanations. One competent teacher shared her feelings, "I would pick a little kid in my class that is real good to demonstrate it."

Furthermore, in justifying the appropriateness of the skills taught, competent teachers primarily relied on logical or technical explanations (e.g., safety factor, mechanics of skills,

goal accomplishment, game strategies, etc.) of the content. When asked, in a role playing situation, what would her response be to students when questioned about why a specific skill had to be performed a particular way, a female competent teacher replied:

> I really try to explain the physics behind it [skill]. I try to show hand position and which way to move in the water.

And, another teacher who has been teaching physical education for more than 13 years, explained it this way:

> If you throw it [football] that way, you may run the risk of injuring yourself.

Novices more often justified the content based on general acceptable norms (e.g., we have always done it this way) or on their authority as teachers. In providing the different rationale for why a skill has to be learned and practiced one specific way, one novice teacher boldly declared, "Because I am the teacher and you do what I say. . . You have to do it this way because someone made up this game and that's the way to do it." Another student teacher commented, "You can do it your way on your own time, but you do it how I want it done on my time."

Surprisingly, novice teachers when planning to teach new content, referenced books for various drills and lead-up games (i.e., activities). Competent teachers referred to external sources for identifying skill components (i.e., content). For example, one novice teacher when asked about concerns she had in

planning a particular unit responded with, "I don't know any drills, so I would look at books for some drills."

Reflective Practice. When planning, competent teachers recognized the variability of students' ability and knowledge. Relatedly, these teachers anchored their early lessons in a unit to student assessment. This assessment was informal, subjective, and continued throughout the unit. Competent teachers used on-going appraisals of student learning to identify learning difficulties and design supplemental, remedial activities. Furthermore, through student performance observations, competent teachers constantly used subjective evaluation in making decisions regarding subsequent teaching activities.

> Lots of times what I do after I initially get everyone on the floor with a basketball in their hand is just have them dribble around the gym at their own speed . . . it gives me a chance to look at the skills and make some assessments.

Novice teachers, however, tended to perceive limited variation in student knowledge, ability, and skill. Most novices believed the students would know little of the subject matter to be taught. As one put it: "I would assume they would know nothing, but I would hope they had at least seen it [softball] played before." Furthermore, novices organized and implemented instructional programs based upon their knowledge of the subject matter and availability of equipment, rather than the needs and abilities of their students. For example, one novice teacher

described how she would organize a gymnastic unit:

> Well, the first thing I will do is, sit down and make up unit objectives--what I would want them to do in the amount of time I have to do it. How many weeks do I have. . . . I have to know what type of equipment I will be able to use, and based on that plan the activities.

Apparently, for these novice teachers, assessment of students competence and progress did not appear to factor into the pre- or in-class decision making.

Conclusions and Discussion

The findings of this investigation extends our understanding of the differences in and the development of teaching competence and expertise. By identifying developmental differences, this study has important implications for teachers and teacher educators. While simply understanding what competent teachers do and why cannot catapult one from the ranks of the novices into the land of competence, it can provide benchmarks to measure progress and offer reachable goals.

The findings suggest that novices, due to their lack of experience and limited knowledge, require different strategies to meet their occupational demands. They also suggest that novices need different forms of in-service training in order to advance in their level of expertise. For example, they need to develop insightful methods of student assessment and discover new ways to conceptualize subject matter based on student needs. Competent

teachers would appear to benefit from in-service programs that allow them to share ideas regarding instructional activities and emphasized the technical qualities of skills and concepts.

As Berliner (1988) noted, "although we have gained some insight into the differences between experts and novices in various fields, we have only the scantiest knowledge about the ways one progresses from novice to expert within a field" (p. 39). This study moves us a step closer.

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